B.E. Fourth Semester (Computer Engineering) (C.B.S.)

File Structures & Data Processing Paper – II

P. Pages : 3 **KNT/KW/16/7304**

Time : Three Hours * 0 1 6 1 * Max. Marks : 80

Notes : 1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Solve Question 11 OR Questions No. 12.
8. Assume suitable data whenever necessary.
9. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) Describe between the physical file & logical file. **6**

b) Explain the organisation of a typical disk drive with a neat labeled diagram. **7**

OR

2. a) Explain difference between following. **6**

i) Constant linear velocity (CLV) and constant angular velocity (CAV).

ii) Organising track by block and organising track by sector.

b) Calculate space required on tape, if we wont to store 1 million 100 bytes records on a 7250 bpi (bits per inches per track) tape, that has an internal block gap of 0.2 inches and with a blocking factor of 60. Hence calculate the space required. **7**

3. a) Define the following terms:- **8**

i) File Access method.

ii) Meta data.

iii) RRN (Relative Record number).

iv) Template class.

b) Explain with example Unix tools for sequential processing. **5**

OR

4. a) State and explain different factors affecting the portability in a file. Also explain different methods used for achieving portability in file. **7**

b) Define the term 'Record'. Explain with example different methods for organising the records on the files. **6**

5. a) Determine the Huffman code for the following string of characters and compute the average bits saved as compared to 8 bit ASCII. **8**

Save forest save Environment.

b) Explain Binary search method. State and explain the limitation of binary search. **6**

OR

6. a) Consider the following frequency table. **8**

Char.	p	q	r	s	t	u
Frequency	25	30	15	10	15	5

Apply the Huffman coding compression technique to find variable length coding. Also compute the average length.

b) Explain how records can be deleted and space of deleted record can be reclaimed in:- **6**

i) Fixed length records.

ii) Variable length records.

7. a) Consider the following list of unsorted keys **7**

F,D,C,G,H,I,B,E,A.

Show the stepwise heap building process till the completion of heap.

b) Describe how merging is used to sort large files on the disk. **6**

OR

8. a) Write a detailed note on conceptual tool kit for external sorting. **6**

b) Explain with example different utilities for sorting and co-sequential processing in Unix. **7**

9. a) What do you mean by multilevel indexing? Explain the concept of B-Trees in multilevel indexing with example. **7**

b) Differentiate between the following:- **6**

i) B-Tree and B + Tree.

ii) Binary search tree and AVL Tree.

iii) Indexed set and sequence set.

OR

10. a) Explain the concept of indexed sequential access with example. **6**

b) Explain deletion, merging and redistribution of element in B-Tree. **7**

11. a) Explain simple hashing Algorithm. **6**

b) What is collision? Explain four different techniques for collision resolution. **8**

OR

12. a) Explain:- **6**

i) Double Hashing.

ii) Chaining with separate over flow area.

iii) Linear hashing.

b) Consider the set of keys and the corresponding Address produced by some hash function. **8**

Key (k)	Home Address hck
COLE	20
BATES	21
ADAMS	21
DEON	22
EVONS	20

Table size = 23, solve the following using above table:-

i) Draw hash table using collision resolution by progressive overflow. Also find average search length to access the disk to retrieve a record.

ii) Draw hash table using collision Resolution technique chaining with a separate over flow area method.

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